



ESTES INDUSTRIES  
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EST 2159

**EX**  
SERIES  
ALMOST READY TO FLY

# FIREFLASH™

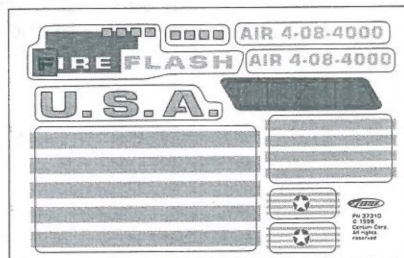
## FLYING MODEL ROCKET KIT INSTRUCTIONS

**MATERIALS REQUIRED:** PENCIL, WHITE OR YELLOW GLUE, TUBE-TYPE PLASTIC CEMENT, SANDPAPER, MASKING TAPE, HOBBY KNIFE, LAUNCH ROD

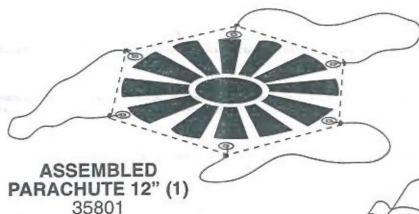
**ALL GLUED AREAS ARE SHADED IN GRAY**

Be sure to read all instructions, test fit all parts, & sand if necessary before gluing.

### PARTS LAYOUT



DECAL SHEET (1)  
37310



ASSEMBLED  
PARACHUTE 12" (1)  
35801

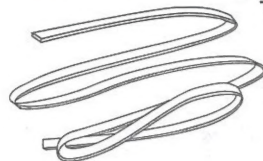
BLACK PLASTIC TUBE  
COUPLER WITH LAUNCH  
LUG (1)  
71072

BLACK PLASTIC  
CAVITY CAP BT-50 (1)  
71071



CLAY WEIGHT  
(2 PACKS)  
85705

LARGE DIAMETER  
GRAY BODY TUBE  
BT50 (1)  
30372



SHOCK CORD  
#1/8 x 36 (1)  
38375

LARGE DIAMETER  
BLACK BODY TUBE  
BT50-9 (1)  
30351

BLACK PLASTIC  
TUBE ADAPTER  
TA550 (1)  
71067

RED  
NOSE CONE  
PNC5A (1)  
72598

SMALL DIAMETER  
BLACK BODY  
TUBES BT5-9 (2)  
30293



WHITE  
PLASTIC FIN  
UNIT BT-5 (1)  
72620

RED TUBE COUPLER  
KJT-5d (1)  
30180

GREEN ADAPTER  
RING #2050S (1)  
30164-2

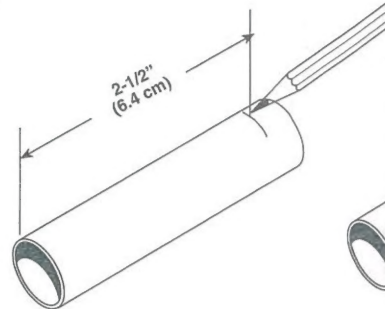
BLUE ENGINE  
MOUNT TUBE 20J (1)  
30326-1

SPLIT ADAPTER  
RING 2050S (1)  
80425

ENGINE HOOK  
EH-2A (1)  
35021

BLACK PLASTIC FIN  
UNIT PFU50D (1)  
34060

1.

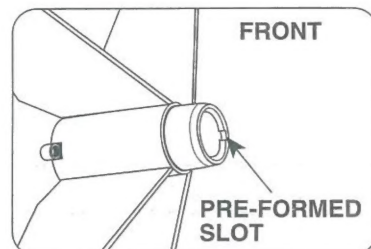


A. Mark the blue  
engine mount tube  
at 2-1/2" (6.4 cm).

B. Use a  
1/8" hole  
the 2-1/2"

2.

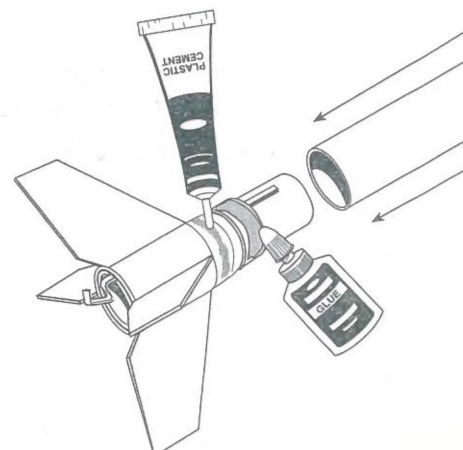
A. Test fit the engine mount into the  
of the black fin unit.

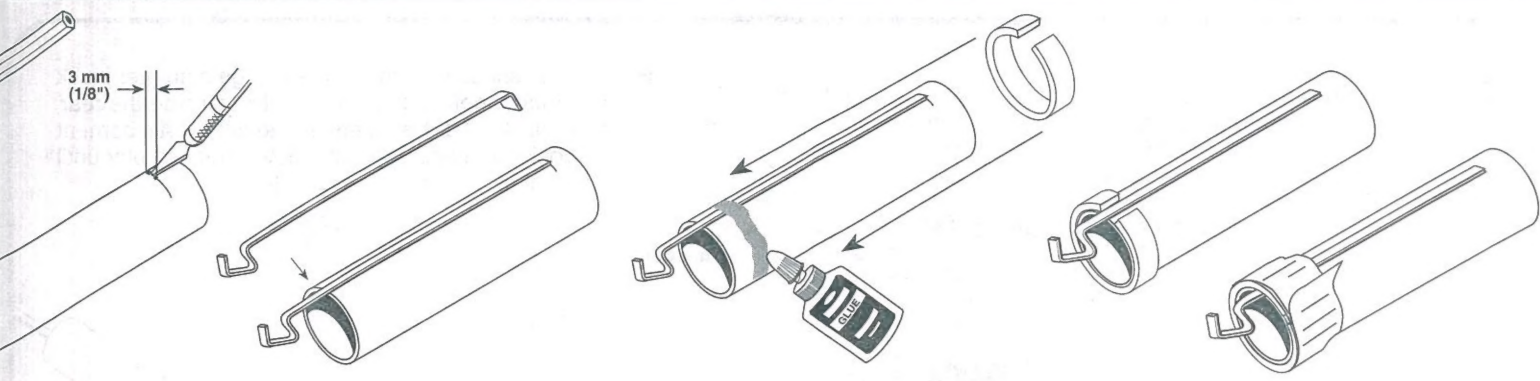


**NOTE:** The front of  
the fin unit has a  
pre-formed slot for  
the engine hook  
and a shoulder.

3.

A. Apply a band of white or yellow  
and a band of plastic cement a  
on the fin unit. In one continuous  
tube over the adapter ring until  
fin unit. Immediately wipe away





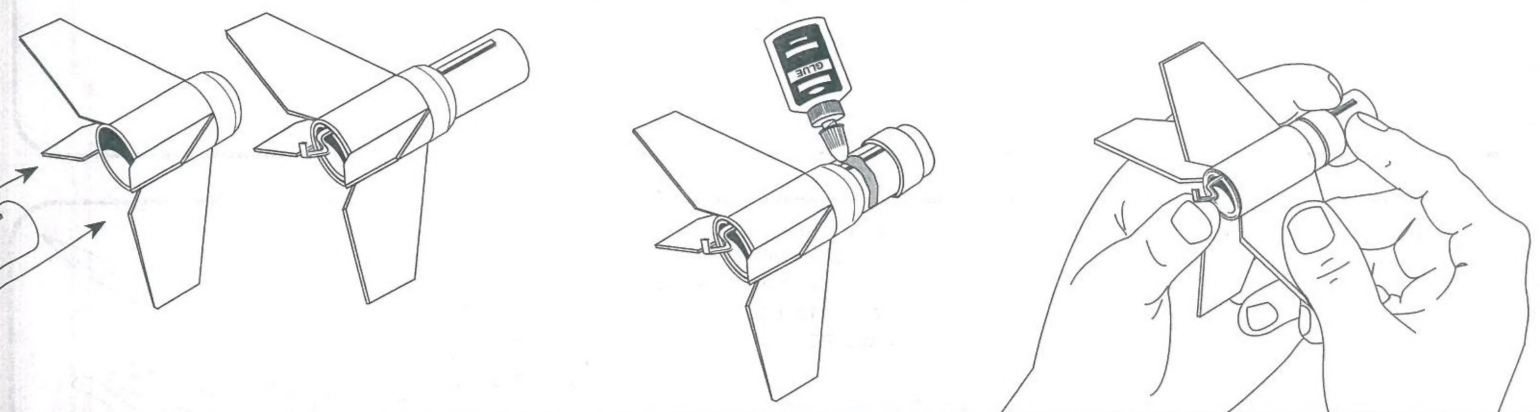
by knife to make  
mm) wide slit at  
(6.4 cm) mark.

C. Insert the engine hook into  
the slit as shown.

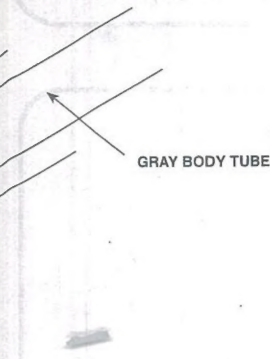
D. Apply glue to the rear of the engine mount tube and slide the split  
adapter ring onto the tube until their rear edges are even. Wrap masking  
tape around the ring in order to pinch the ring together so that it  
contacts the tube all the way around, let dry, and **remove tape**.

ear B. Slide the engine mount into the rear of the  
fin unit so that the engine hook rests in  
the pre-formed slot and the rear edges of  
the tube and fin unit are even.

C. Slide the green adapter ring part way down the front of the engine mount tube. (You  
may need to sand the inside of the ring to make it fit.) Apply a band of glue around the  
engine mount tube between the ring and fin unit, hold the rear edges even, and slide  
the ring down the tube in one continuous motion. **DO NOT STOP** moving the ring until  
it rests evenly against the shoulder of the fin unit as **THE GLUE WILL GRAB AND  
PREVENT THE RING FROM BEING POSITIONED PROPERLY**. Let dry.



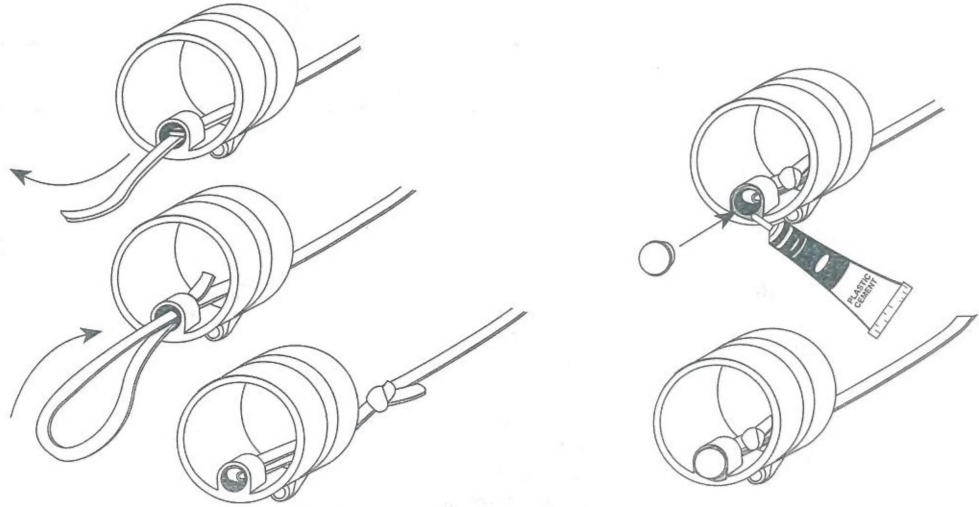
ue around the adapter ring  
nd the front of the shoulder  
otion slide the gray body  
e rests evenly at top edge of  
y excess cement.



4.

A. Thread the shock cord into the cavity in  
the plastic tube coupler, then tie the shock  
cord off to the bar that runs across the  
front of the cavity.

B. Carefully apply a small amount of plastic  
cement around the rear edge of the  
cavity and fit the cavity cap into place.  
**DO NOT GET PLASTIC CEMENT ON  
THE SHOCK CORD!** Let dry.





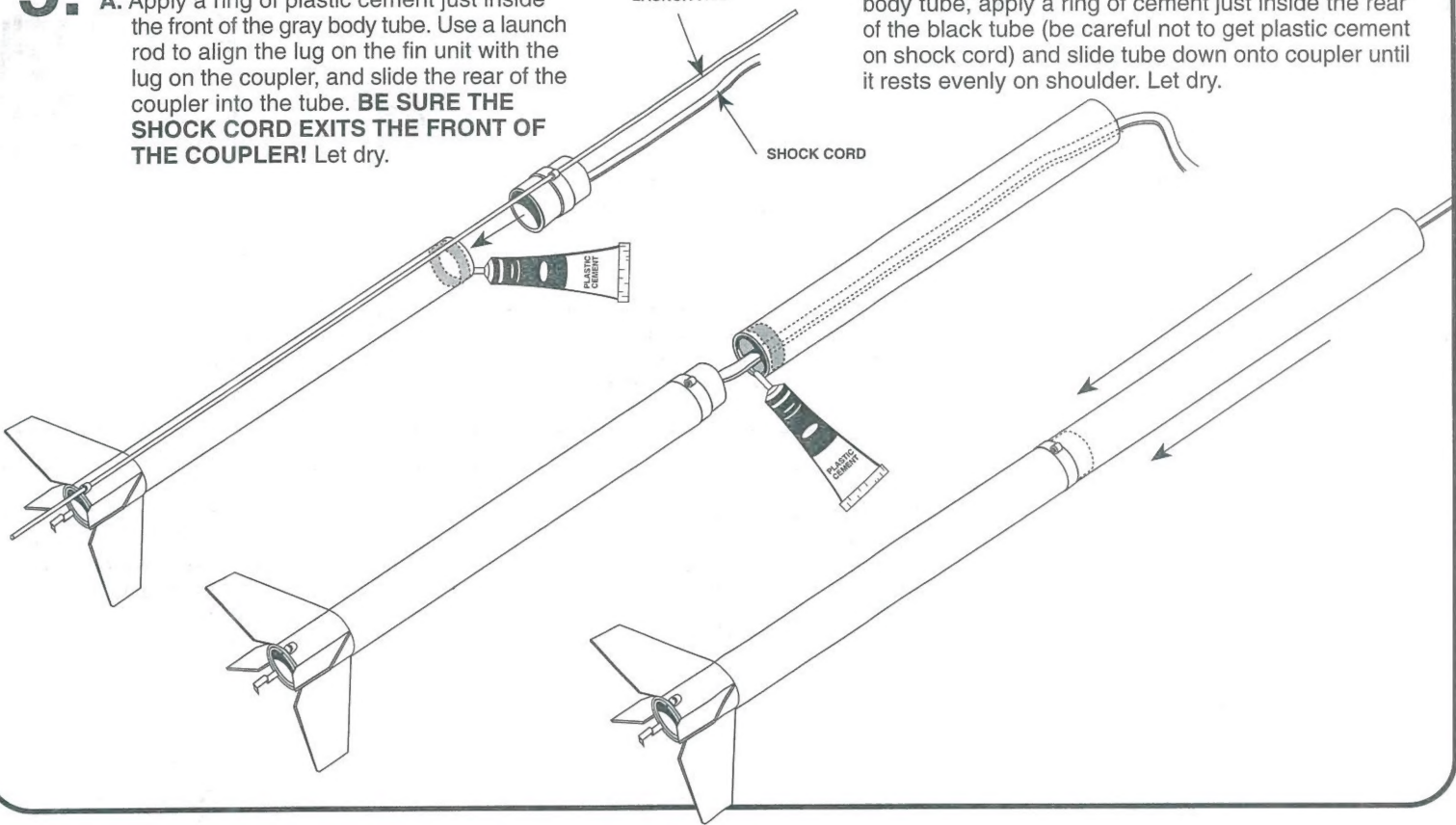
5.

- A. Apply a ring of plastic cement just inside the front of the gray body tube. Use a launch rod to align the lug on the fin unit with the lug on the coupler, and slide the rear of the coupler into the tube. **BE SURE THE SHOCK CORD EXITS THE FRONT OF THE COUPLER!** Let dry.

LAUNCH ROD

SHOCK CORD

- B. Feed the shock cord through the large diameter black body tube, apply a ring of cement just inside the rear of the black tube (be careful not to get plastic cement on shock cord) and slide tube down onto coupler until it rests evenly on shoulder. Let dry.



6.

- A. Form one square of clay into "snake", drop into nose cone, then use the end of a pencil to pack the nose cone full of clay.

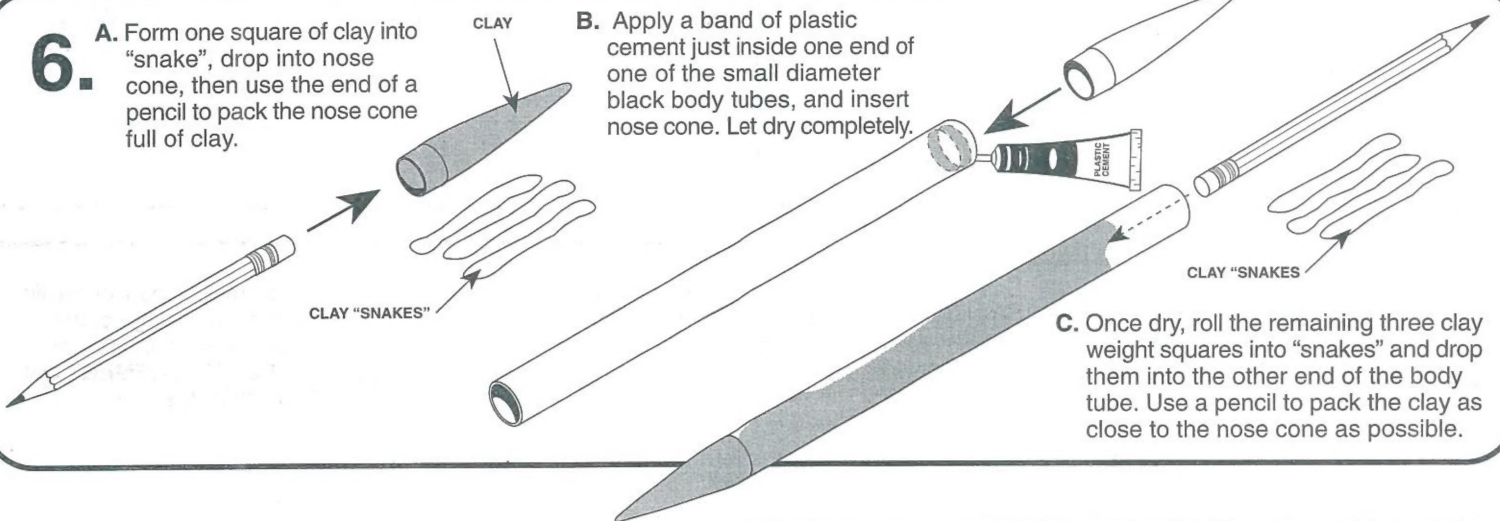
CLAY

CLAY "SNAKES"

- B. Apply a band of plastic cement just inside one end of one of the small diameter black body tubes, and insert nose cone. Let dry completely.

CLAY "SNAKES"

- C. Once dry, roll the remaining three clay weight squares into "snakes" and drop them into the other end of the body tube. Use a pencil to pack the clay as close to the nose cone as possible.



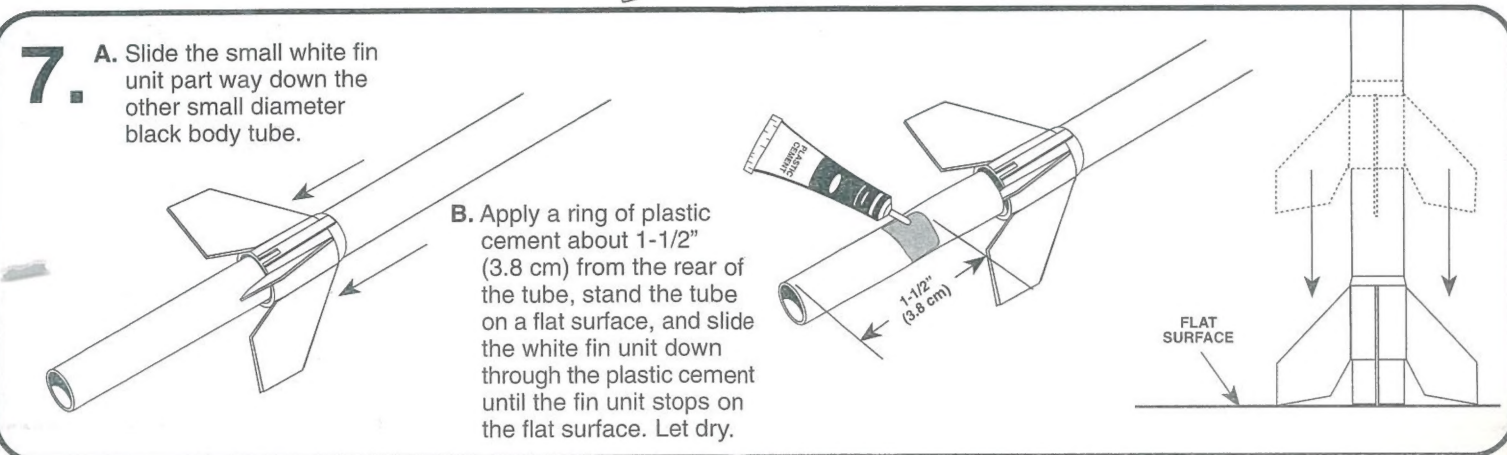
7.

- A. Slide the small white fin unit part way down the other small diameter black body tube.

- B. Apply a ring of plastic cement about 1-1/2" (3.8 cm) from the rear of the tube, stand the tube on a flat surface, and slide the white fin unit down through the plastic cement until the fin unit stops on the flat surface. Let dry.

1-1/2" (3.8 cm)

FLAT SURFACE



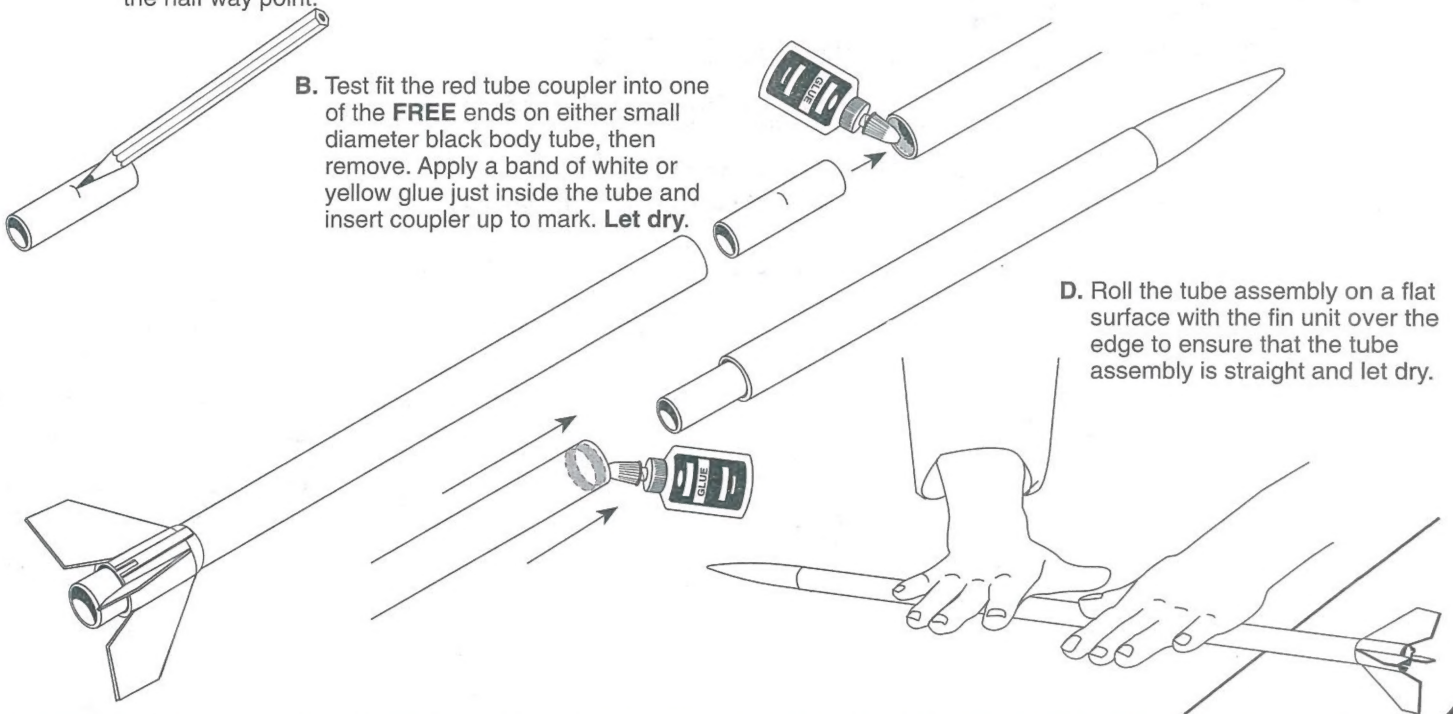
# 8.

A. Use a pencil to mark the red tube coupler at the half way point.

B. Test fit the red tube coupler into one of the **FREE** ends on either small diameter black body tube, then remove. Apply a band of white or yellow glue just inside the tube and insert coupler up to mark. **Let dry.**

C. Apply glue just inside the other free end of the other small diameter tube and slide the other half of the coupler into tube until the tubes are perfectly joined.

D. Roll the tube assembly on a flat surface with the fin unit over the edge to ensure that the tube assembly is straight and let dry.



# 9.

A. Thread the free end of the shock cord up through the rear of the black plastic tube adapter and tie to the eyelet at the top of the adapter using a double knot.

B. Apply a ring of plastic cement just inside the rear end of the small diameter tube assembly and insert the tube adapter as shown. Let dry completely.



# 10.

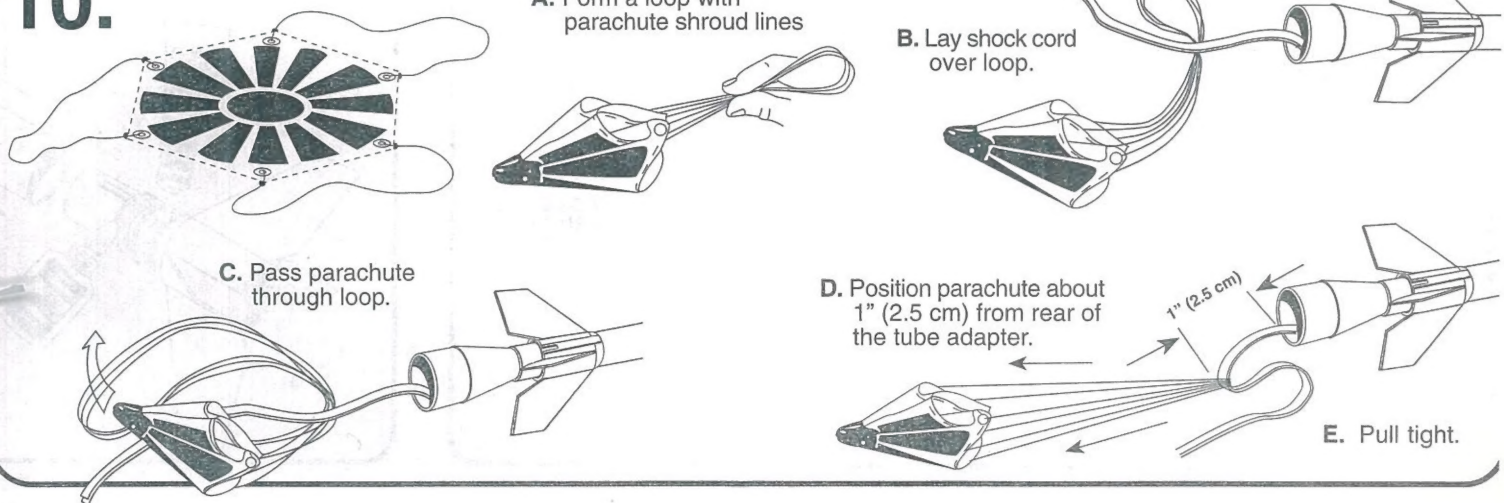
A. Form a loop with parachute shroud lines

B. Lay shock cord over loop.

C. Pass parachute through loop.

D. Position parachute about 1" (2.5 cm) from rear of the tube adapter.

E. Pull tight.



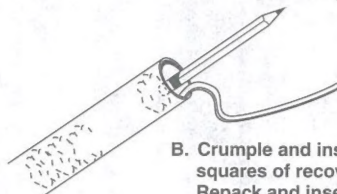


# 11. DECAL APPLICATION

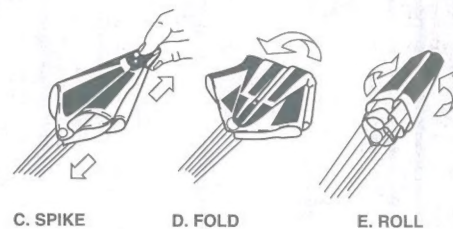
A. Carefully peel one decal at a time from backing sheet and position where shown.

# 12. ROCKET PREPARATION

A. Remove forward section, shock cord and parachute.

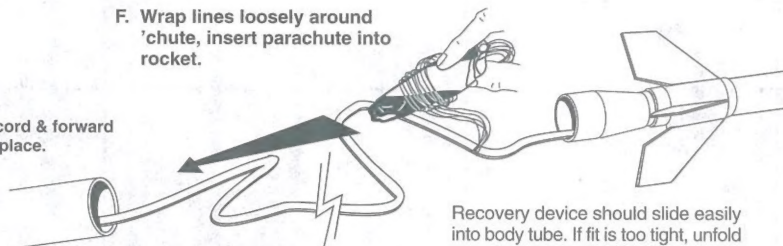


B. Crumple and insert four squares of recovery wadding. Repack and insert parachute, shock cord and forward section.



F. Wrap lines loosely around chute, insert parachute into rocket.

G. Slide shock cord & forward section into place.



Recovery device should slide easily into body tube. If fit is too tight, unfold and repack again.

# 13. ENGINE PREPARATION

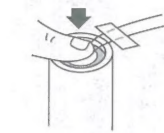
A. Separate igniter and igniter plug.



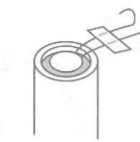
B. Hold engine upright, drop in igniter. Igniter must touch propellant.



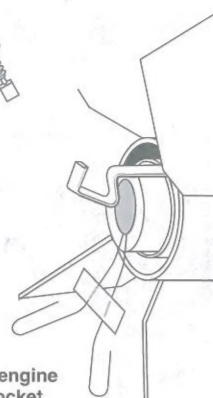
C. Insert igniter plug.



D. Firmly push all the way in.



E. Bend igniter wires back.



F. Insert engine into rocket.

## LAUNCH SUPPLIES

To launch your rocket, you will need the following:

- Launch Pad (Estes Porta-Pad® II)
- Launch Controller (Estes Electron Beam®)
- Recommended Estes Engines: B4-4, B6-4, C6-5  
Use an B6-4 for your first flight to become familiar with your rocket's flight pattern.
- Recovery Wadding (EST 302274)
- Igniters and Igniter Plugs (included with all Estes engines) Igniter Plugs - U.S. Patent Nr. 5,509,354

Use only Estes products to launch this rocket.

ENGINE	PROJECTED ALTITUDE	
	Feet	Meters
B4-4	210	64
B6-4	235	72
C6-5	650	198

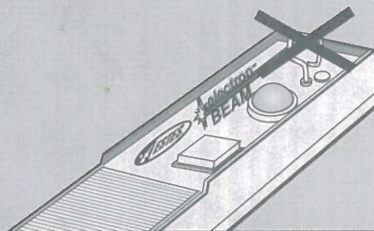
## TIPS FOR FLYING YOUR ROCKET

- Choose a large field away from power lines, buildings, tall trees, and low flying aircraft. Try to find a field at least 250 feet (76 meters) square. The larger the launch area, the better your chance of recovering your rocket.
- Launch area must be free of dry weeds and brown grass.
- Launch only during calm weather with little or no wind and good visibility.
- Don't leave parachute packed more than a minute or so before launch during cold weather (colder than 40°Fahrenheit [4°Celsius]).
- Always follow the National Association of Rocketry (NAR) MODEL ROCKETRY SAFETY CODE while participating in any model rocketry activities. The safety code is enclosed with this kit.

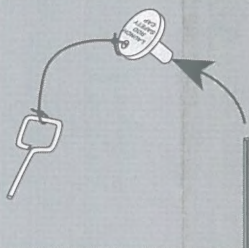


## COUNTDOWN AND LAUNCH

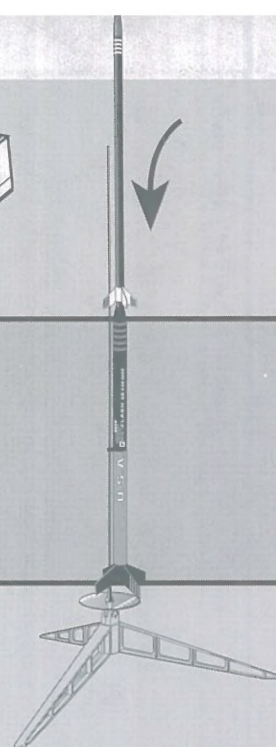
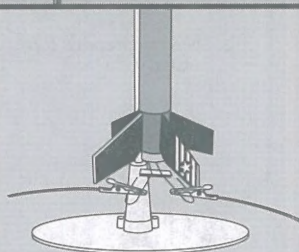
- 10...** Safety key must not be in launch controller.  
The safety cap with safety key attached should already be on the launch rod.



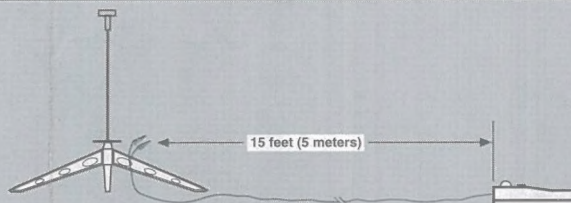
- 9...** Remove safety cap from launch rod, slide launch lugs over rod. Make sure rocket slides freely and micro-clips are clean for good electrical contact.



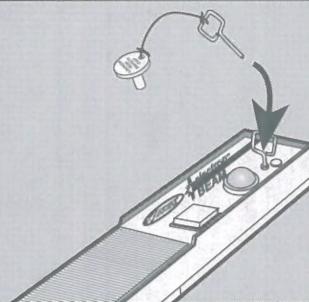
- 8...** Attach micro-clips to the igniter wires. Arrange the clips so they do not touch each other or the metal blast deflector. Attach clips as close to protective tape on igniter as possible.



- 7...** Move everyone back from your rocket as far as launch wire will permit at least 15 feet (5 meters).

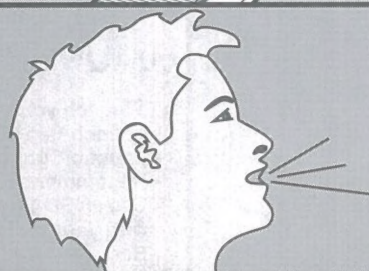


- 6...** Insert safety key to arm the launch controller.



- 5...** Start audible countdown.

**4...3...2...1.....**



## LAUNCH!

Push and hold button until engine ignites.

**For safety, immediately remove safety key from launch controller and replace safety cap on launch rod.**

## MISFIRES

When an ignition failure occurs, **remove the safety key** from the launch control system and **wait one minute before approaching the rocket**. Remove the expended igniter from the engine and install a new one. Be certain the coated tip is in direct contact with the engine propellant. Broken or chipped coating will not affect the performance of the igniter. Reinstall the igniter plug as illustrated previously. Repeat the countdown and launch procedure.